



# UNITED STATES PATENT AND TRADEMARK OFFICE

*Lee*

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/396,352	09/14/1999	TUMAY O. TUMER	NOVA-002-USA	7308
34824	7590	05/23/2005	EXAMINER	
MR MICHAEL A. BINKHURST 131 SOUTH FORK DRIVE SUNVALLEY, NM 89433			LEE, BENJAMIN C	
			ART UNIT	PAPER NUMBER
			2632	

DATE MAILED: 05/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/396,352

Applicant(s)

TUMER, TUMAY O.

Examiner

Benjamin C. Lee

Art Unit

2632

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 27,28,33-52 and 54-89 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 27,28,33-52 and 54-89 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/22/04 has been entered.

### *Claim Status*

2. **Claims 27-28, 33-52 and 54-89** are pending.

### *Claim Rejections - 35 USC § 103*

3. **Amended claims 27**-are rejected under 35 U.S.C. 103(a) as being unpatentable over Kip et al. (US pat. #5,105,190) in view of Moskowitz et al. (US pat. #5,528,222) and Carroll (US pat. #4,857,893).

1) In considering amended claims 27, 50-52 and 64:

Kip et al. discloses a tag comprising a circuit having: an antenna (5) that receives an electromagnetic wave (Fig. 2); a signal receiving system that receives and stores input data derived from the wave (23, 24 of Fig. 2; Fig. 3), a separate power storage component that receives and stores the energy for use in powering the circuit including the transmitting antenna (6, 26, 8 of Fig. 2); a data processing system (7 of Fig. 2) that produces output data from the input data; and the backscatter antenna (5) transmits at least a portion of the output data

Art Unit: 2632

externally to the tag (Figs. 2-3); except: a) the claimed separate use of first and second antennas for respective receiving and transmitting; b) the circuit is in the form of an integrated circuit.

In the same art of tag construction, Moskowitz et al. teaches the known alternative use of first and second separate (dipole) antennas for receiving and transmitting, respectively (Fig. 5); while Carroll teaches all circuit components of a tag are implemented in the form of an integrated circuit located on a die (Figs. 9A-9B and col. 11, line 11 to col. 12, line 51).

While Kip et al. shows using a single antenna for transmitting and receiving requiring sharing of the antenna, Moskowitz et al. demonstrated the single antenna's well known alternative of using separate transmitting and receiving antennas (Figs. 4-6). It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to use separate receiving and transmitting antennas in a system such as taught by Kip et al. and Moskowitz to alleviate the need to share a single antenna for both receiving and antenna thus alleviating antenna-sharing timing management constraints, and furthermore that first and second dipole antennas as taught by Moskowitz et al. can be used as alternatives to the coil antenna of Kip et al.

In view of the teachings by Kip et al., Moskowitz et al. and Carroll, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to implement the tag circuit of Kip and Moskowitz in an integrated circuit form as taught by Carroll for mass production benefits such as cost, and compact housing for ease of physical application in intended uses.

2) In considering amended claim 28, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in the consideration of amended claim 27.

Art Unit: 2632

3) In considering amended claim 33, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 27, including:

--the claimed wave has a wavelength within a spectrum of the wavelengths from radio waves to ultraviolet light (RF of Abstract of Moskowitz et al.; col. 4, lines 50-55 and col. 2, lines 43-52 of Carroll.)

While Kip et al. did not specify the frequency range of the electromagnetic waves in the spectrum, Moskowitz et al. and Carroll specified the RF waves, and Carroll indicated that use of RF waves as opposed to magnetic fields enables longer reading range (col. 2, lines 43-52). It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to implement the tag system of Kip et al., Moskowitz et al. and Carroll using RF waves for increased reading range for broader utility.

4) In considering amended claims 34-35, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 27, including:

--the claimed nonvolatile memory section (24 of Fig. 5 and col. 2, lines 52-55 and col. 3, lines 4-5 of Kip et al.) that stores at least one of the input data and the output data (both).

5) In considering amended claims 36 and 43, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 27, including:

a) claimed shift register circuit (76, 82 in Fig. 4 of Carroll);

except:

b) the claimed multiplexer that controls flow of the input data.

Kip et al. teaches receiving input data for writing into the tag memory (24) whereby the input data is received in electromagnetic wave in a serial manner (Fig. 3, waveform "b"). It

Art Unit: 2632

would have been obvious to one of ordinary skill in the art at the time of the claimed invention to use either an appropriate shift register circuit shown as known in the art by Carroll, or a multiplexer to control flow of the input data into the memory for storage in a tag such as taught by Kip et al., Moskowitz et al. and Carroll if the memory-write operation involves converting the serial input data stream into parallel data bits, such as in parallel-input type memories.

6) In considering amended claims 37 and 42, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 27, including:

a) the claimed clock generator circuit (28 in Fig. 2 of Carroll)

except:

b) the claimed pulse generating circuit.

Carroll shows the known use of a clock generator circuit for providing timing signals for controlling tag operations (28 in Fig. 2 and col. 4, lines 55-57). Kip et al. shows that the IC 7 in Fig. 3 activates switch 9 according to the output data in digital form. It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to include a clock generator circuit such as taught by Carroll, or a similar pulse generating circuit (since used for digital switching here) in IC 7 in a tag such as taught by Kip et al., Moskowitz et al. and Carroll to provide the timing signals for operation of the switch to generate the digital output data.

7) In considering amended claims 38 and 40, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 27, including:

--the claimed input and output data are in digital form (Figs. 2-3 of Kip et al.)

8) In considering amended claims 39 and 41, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 27, including:

--the claimed input and output data are in analog form (Fig. 5A of Carroll).

While Kip et al. discloses a tag communication system using digital data format, Carroll shows the known alternative of using analog. It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to use either analog or digital form for the input and output data in a tag such as taught by Kip et al., Moskowitz et al. and Carroll based on the preferred modulation method of choice without unexpected results.

9) In considering amended claim 44, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 27, including:

--the claimed second antenna is a backscatter type antenna (antenna 5 in Fig. 2 and col. 2, lines 32-46 of Kip et al. describing the antenna having backscattering characteristics when in transmitting mode, in combination with Moskowitz et al.'s teaching of using second antenna for transmitting separate from first antenna for receiving.)

10) In considering amended claim 48, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 27, including:

--the claimed circuits for logic (AND & OR/NOR logic gates used in Fig. 4 of Carroll), sequencing (register 76 in Fig. 4 of Carroll) and switching (9 in Fig. 2 of Kip et al.; gated switching in Fig. 4 of Carroll).

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to use such known logic and sequencing circuits in a tag such as taught by Kip et al., Moskowitz et al. and Carroll to logically determine (using logic) the current mode of operation (reading and writing in Fig. 3 of Kip et al.) and to time (using sequencing) the operational stages of receiving, reading, writing, switching and transmitting.

Art Unit: 2632

10) In considering amended claim 49, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 28, plus the consideration of claim 33.

11) In considering amended claims 54-55, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 28, plus the consideration of claims 34-35, respectively.

12) In considering amended claim 56, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 28, except:

-- the claimed multiplexer that controls flow of the output data.

Kip et al. teaches reading output data from the tag memory (24) for serial output using switch 9 (Fig. 2) whereby the data is digital (Fig. 3, waveform "b"). It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to use a multiplexer to control flow of the output data during reading from the memory (conversion from parallel to serial data) for outputting/transmitting in a tag such as taught by Kip et al., Moskowitz et al. and Carroll if the memory-read operation involves converting the memory stored data into serial data stream, such as when the memory is of the parallel-out type memory.

13) In considering amended claim 57, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 28, plus the consideration of claim 37.

14) In considering amended claims 58 and 60, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 28, plus the consideration of claims 38 and 40, respectively.



Art Unit: 2632

15) In considering amended claims 59 and 61, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 28, plus the consideration of claims 39 and 41, respectively.

16) In considering amended claims 62-63, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 28, plus the consideration of claims 42-43, respectively.

17) In considering amended claim 68, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 28, plus the consideration of claim 48.

18) In considering amended claims 69-70, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 28, plus the consideration of claim 33 (RF).

19) In considering amended claim 71, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 27, plus the consideration of claims 34 and 52.

20) In considering amended claim 72, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 28, plus the consideration of claim 71, including:

--the claimed monolithic integrated circuit (line 17 of Abstract of Carroll).

21) In considering amended claim 73, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 27, including:

--the claimed data processing system that processes the input data to produce at least one of a decision and a take action (circuit component 7 in Fig. 2 of Kip et al. that based on the input data in the input wave to decide on the operations and actions of reading, writing, and transmitting.)

22) In considering amended claim 74, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 28, plus the consideration of claim 73.

23) In considering amended claims 75-78, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in the consideration of claims 27 and 51, including:

--the claimed capacitor as power storage (8 in Fig. 2 of Kip et al.); driver circuit (9, 10 in Fig. 3 of Kip et al.) that utilizes the second (transmitting) antenna to modulate and reflect the wave to send the output data to a receiver (3 in Fig. 2 of Kip et al.)

24) In considering amended claim 79, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 75, including:

--the claimed first and second antennas are positioned on opposite ends of the tag (Fig. 5 of Moskowitz et al.)

25) In considering amended claim 80, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 75, including:

--the claimed tuning circuit ("C" and "10" in Fig. 4 and "10" in Fig. 2 of Kip et al.) that tunes the first antenna to receive the wave at a frequency of between RF waves and ultraviolet, inclusive ("C3", "C4" in Fig. 6 and col. 5, lines 34-38 of Carroll.)

26) In considering amended claim 81, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 75, plus the consideration of claim 35.

27) In considering amended claims 83, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 27, plus the consideration of claim 50 (redundant).

Art Unit: 2632

28) In considering amended claim 84, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 27, plus the consideration of claim 51.

29) In considering amended claims 85-86, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 28, plus the consideration of claims 50-51.

30) In considering amended claim 87, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 27, including:

--the claimed first and second antennas are a single antenna (Figs. 2 & 4 of Kip et al.)

31) In considering amended claim 88, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 28, including:

--the claimed first and second antennas are a single antenna (Figs. 2 & 4 of Kip et al.)

4. **Claims 45 and 65** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kip et al. in view of Moskowitz et al., Carroll and Roth et al. (US pat. #5,272,117).

1) In considering claim 65, Kip et al., Moskowitz et al. and Carroll made obvious all of the claimed subject matter as in claim 28, except:

--the claimed wherein the integrated circuit (IC) is built onto different materials selected from the group consisting of silicone, germanium, GaAs, sapphire, or diamond.

Carroll teaches using a chip substrate wherein the integrated circuit and various other tag components are built onto (Figs. 9A-9B), while various materials including silicone, germanium, GaAs, and sapphire or diamond have been known for use in constructing IC or semiconductor substrates or supports, such as taught by Roth et al. (col. 2, line 67 to col. 3, line 14). It would have been obvious to one of ordinary skill in the art at the time of the claimed invention that such

Art Unit: 2632

conventionally used materials can be used as the chip die material the device such as taught by Kip et al., Moskowitz et al. and Carroll is built onto in view of Roth et al.

2) In considering claim 45, Kip et al., Moskowitz et al. and Carroll made obvious all of the claimed subject matter as in claim 27, plus the consideration of claim 65 above further in view of Roth et al.

5. **Claims 46-47 and 66-67** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kip et al., Moskowitz et al. and Carroll, and further in view of Schoenian et al. (US pat. #5,748,106).

1) In considering claims 46-47, Kip et al., Moskowitz et al. and Carroll made obvious all of the claimed subject matter as in claim 27, except:

--the claimed wherein the integrated circuit contains test and monitoring control circuitry or points and pads.

However, the concept of testing and monitoring electronic circuits and components on devices either via onboard circuitry or via external devices using testing and monitoring points/pads, in order to ensure the circuits/components are working properly has been well known in the electronic device art. Schoenian et al. further demonstrated that it has been known to test/monitor the circuits on an electronic tag (col. 2, lines 1-13 and Fig. 1). It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to include test and monitoring control circuitry or points and pads in an electronic tag device such as taught by Kip et al., Moskowitz et al. and Carroll in order to ensure proper operations such as taught by Schoenian et al. by allowing testing using either on-board or external testing/monitoring circuitry.

Art Unit: 2632

2) In considering claims 66-67, Carroll and Moskowitz et al. made obvious all of the claimed subject matter as in claim 28, plus the consideration of claims 46-47 above further in view of Schoenian et al.

6. **Claim 82** is rejected under 35 U.S.C. 103(a) as being unpatentable over Kip et al., Moskowitz et al. and Carroll further in view of Carney et al. (US pat. #5,446,447).

1) In considering amended claim 82, Kip et al., Moskowitz et al. and Carroll render all of the claimed subject matter obvious as in claim 75, except:

--the claimed driver circuit drives the second antenna as a half-wave or quarter-wave reflector.

The RF tag of Kip et al., Moskowitz et al. and Carroll drives the second antenna as a reflector (backscatter) for communicating output data out of the tag using known antennas including coil/loop antennas and dipole antennas.

In the same art, Carney et al. teaches the known alternative use of a half-wave or quarter-wave patch antenna as the backscattering/reflector antenna in an RF passive tag for operation in the 2.5 GHz or 5.7 GHz ranges (col. 7, lines 27-57; col. 5, lines 56-67). It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to use a known patch antenna such as taught by Carney et al. as the second antenna in a tag such as taught by Kip et al., Moskowitz et al. and Carroll if 2.5 GHz or 5.7 GHz operating frequency ranges are desired or preferred in particular applications or application environments.

7. **Claim 89** is rejected under 35 U.S.C. 103(a) as being unpatentable over Kip et al., Moskowitz et al. and Carroll further in view of Lake (US pat. #6,031,459).

Art Unit: 2632

1) In considering claim 89, Kip et al., Moskowitz et al. and Carroll made obvious all of the claimed subject matter as in the consideration of claim 27, except:

--specifying the claimed received wave in the first antenna and the output wave from the second antenna are in a wavelength region of microwave to ultraviolet, inclusive.

While Carroll did not specify whether the radio frequency signals are of the low frequency type or higher microwaves, it has been known to use microwaves as a specific type of radio frequency signals for a passive backscattering tag having either one or two antennas such as taught by Lake (Fig. 1; col. 3, lines 61-62; col. 4, lines 51-58). In view of the teachings by Kip et al., Moskowitz et al., Carroll and Lake it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to use microwaves as the radio frequency signals of choice for communication by the tag in a system such as taught by Kip et al., Moskowitz et al. and Carroll in light of the teaching of Lake without unexpected results.

### ***Response to Arguments***

8. Applicant's arguments with respect to claims **27-28, 33-52 and 54-89** have been considered but are moot in view of the new ground(s) of rejection to overcome the amended feature of a "separate power storage component".

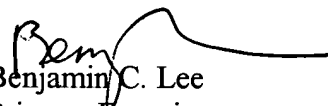
### ***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin C. Lee whose telephone number is (571) 272-2963. The examiner can normally be reached on Mon -Fri 11:00Am-7:30Pm.

Art Unit: 2632

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Wu can be reached on (571) 272-2964. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-8576.

  
Benjamin C. Lee  
Primary Examiner  
Art Unit 2632

B.L.  
May 19, 2005